

PAGE: 1

RAW SEQUENCE LISTING  
PATENT APPLICATION US/09/334,969

DATE: 11/26/1999  
TIME: 15:46:49

Input Set: I334969.RAW

This Raw Listing contains the General Information  
Section and up to first 5 pages.

ENTERED

```

1  <110> APPLICANT: JAKOBSEN, Bent Karsten
2      BOULTER, Jonathan Michael
3  <120> TITLE OF INVENTION: Multivalent T Cell Receptor Complexes
4  <130> FILE REFERENCE: 102286.410
5  <140> CURRENT APPLICATION NUMBER: US/09/334,969
6  <141> CURRENT FILING DATE: 1999-06-17
7  <150> EARLIER APPLICATION NUMBER: PCT/GB99 01583
8  <151> EARLIER FILING DATE: 1999-05-19
9  <150> EARLIER APPLICATION NUMBER: GB 9810759.2
10 <151> EARLIER FILING DATE: 1998-05-19
11 <150> EARLIER APPLICATION NUMBER: GB 9821129.5
12 <151> EARLIER FILING DATE: 1998-09-29
13 <160> NUMBER OF SEQ ID NOS: 85
14 <170> SOFTWARE: PatentIn Ver. 2.1
15 <210> SEQ ID NO 1
16 <211> LENGTH: 744
17 <212> TYPE: DNA
18 <213> ORGANISM: Artificial Sequence
19 <220> FEATURE:
20 <223> OTHER INFORMATION: Description of Artificial Sequence: Gene coding
21      for human HLA-A2/flu matrix peptide restricted
22      JM22 TCR alpha chain fused to c-jun leucine zipper
23      domain.
24 <400> SEQUENCE: 1
25      atgcaactac tagaacaaag tcctcagttt ctaagcatcc aagagggaga aaatctcact 60
26      gtgtactgca actcctcaag tgttttttcc agcttacaat ggtacagaca ggagcctggg 120
27      gaaggtcctg tcctcctggt gacagtagtt acgggtggag aagtgaagaa gctgaagaga 180
28      ctaacctttc agtttggtga tgcaagaaag gacagttctc tccacatcac tgcggccag 240
29      cctggtgata caggcctcta cctctgtgca ggagcgggaa gccaaaggaaa tctcatcttt 300
30      ggaaaaggca ctaaactctc tgtaaacca aatatccaga accctgaccc tgccgtgtac 360
31      cagctgagag actctaaatc cagtgaacag tctgtctgcc tattcaccga ttttgattct 420
32      caaacaaatg tgtcacaaag taaggattct gatgtgtata tcacagacaa aactgtgcta 480
33      gacatgaggt ctatggactt caagagcaac agtgctgtgg cctggagcaa caaatctgac 540
34      tttgcatgtg caaacgcctt caacaacagc attattccag aagacacctt cttccccagc 600
35      ccagaaagtt ccccccgggg tagaatcgcc cggctggagg aaaaagtga aaccttgaaa 660
36      gctcagaact cggagctggc gtccacggcc aacatgctca gggaacaggt ggcacagctt 720
37      aaacagaaag tcatgaacta ctag                                     744
38 <210> SEQ ID NO 2
39 <211> LENGTH: 247
40 <212> TYPE: PRT
41 <213> ORGANISM: Artificial Sequence
42 <220> FEATURE:
43 <223> OTHER INFORMATION: Description of Artificial Sequence: Amino acid
44      sequence of human HLA-A2/flu matrix peptide

```

PAGE: 2

# RAW SEQUENCE LISTING PATENT APPLICATION US/09/334,969

DATE: 11/26/1999  
TIME: 15:46:49

Input Set: I334969.RAW

```

45      restricted JM22 TCR alpha chain fused to c-jun
46      leucine zipper domain.
47  <400> SEQUENCE: 2
48      Met Gln Leu Leu Glu Gln Ser Pro Gln Phe Leu Ser Ile Gln Glu Gly
49          1              5              10              15
50      Glu Asn Leu Thr Val Tyr Cys Asn Ser Ser Ser Val Phe Ser Ser Leu
51          20              25              30
52      Gln Trp Tyr Arg Gln Glu Pro Gly Glu Gly Pro Val Leu Leu Val Thr
53          35              40              45
54      Val Val Thr Gly Gly Glu Val Lys Lys Leu Lys Arg Leu Thr Phe Gln
55          50              55              60
56      Phe Gly Asp Ala Arg Lys Asp Ser Ser Leu His Ile Thr Ala Ala Gln
57          65              70              75              80
58      Pro Gly Asp Thr Gly Leu Tyr Leu Cys Ala Gly Ala Gly Ser Gln Gly
59          85              90              95
60      Asn Leu Ile Phe Gly Lys Gly Thr Lys Leu Ser Val Lys Pro Asn Ile
61          100             105             110
62      Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser Ser
63          115             120             125
64      Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn Val
65          130             135             140
66      Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val Leu
67          145             150             155             160
68      Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp Ser
69          165             170             175
70      Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile Ile
71          180             185             190
72      Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Pro Gly Gly Arg
73          195             200             205
74      Ile Ala Arg Leu Glu Glu Lys Val Lys Thr Leu Lys Ala Gln Asn Ser
75          210             215             220
76      Glu Leu Ala Ser Thr Ala Asn Met Leu Arg Glu Gln Val Ala Gln Leu
77          225             230             235             240
78      Lys Gln Lys Val Met Asn Tyr
79          245
80  <210> SEQ ID NO 3
81  <211> LENGTH: 864
82  <212> TYPE: DNA
83  <213> ORGANISM: Artificial Sequence
84  <220> FEATURE:
85  <223> OTHER INFORMATION: Description of Artificial Sequence: Gene coding
86      for human HLA-A2/flu matrix peptide restricted
87      JM22 TCR beta chain fused to c-fos leucine zipper
88      domain.
89  <400> SEQUENCE: 3
90      atggtggatg gtggaatcac tcagtcccca aagtacctgt tcagaaagga aggacagaat 60
91      gtgaccctga gttgtgaaca gaatttgaac cacgatgcca tgtactggta ccgacaggac 120
92      ccagggcaag ggctgagatt gatctactac tcacagatag taaatgactt tcagaaagga 180
93      gatatagctg aagggtacag cgtctctcgg gagaagaagg aatcctttcc tctcactgtg 240
94      acatcggccccc aaaagaaccc gacagctttc tatctctgtg ccagtagttc gaggagctcc 300

```

PAGE: 3

RAW SEQUENCE LISTING  
PATENT APPLICATION US/09/334,969

DATE: 11/26/1999  
TIME: 15:46:49

Input Set: I334969.RAW

```

95   tacgagcagt acttcggggc gggcaccagg ctcacggtca cagaggacct gaaaaacggt 360
96   ttcccacccg aggtcgctgt gtttgaacca tcagaagcag agatctccca caccctaaaag 420
97   gccacactgg tgtgcctggc cacaggcttc taccctgacc acgtggagct gagctggtgg 480
98   gtgaatggga aggaggtgca cagtggggtc agcacagacc cgcagcccct caaggagcag 540
99   cccgccctca atgactccag atactgcctg agcagccgcc tgagggtctc ggccaccttc 600
100  tggcagaacc cccgcaacca cttccgctgt caagtccagt tctacgggct ctcggagaat 660
101  gacgagtggg cccaggatag ggccaaacct gtcaccaga tcgtcagcgc cgaggcctgg 720
102  ggtagagcag accccggggg tctgactgat acactccaag cggagacaga tcaacttgaa 780
103  gacaagaagt ctgcgttgca gaccgagatt gccaatctac tgaaagagaa ggaaaaacta 840
104  gagttcatcc tggcagctta ctag                                     864

```

105 &lt;210&gt; SEQ ID NO 4

106 &lt;211&gt; LENGTH: 287

107 &lt;212&gt; TYPE: PRT

108 &lt;213&gt; ORGANISM: Artificial Sequence

109 &lt;220&gt; FEATURE:

110 <223> OTHER INFORMATION: Description of Artificial Sequence: Amino acid  
 111 sequence of human HLA-A2/flu matrix peptide  
 112 restricted JM22 TCR beta chain fused to c-fos  
 113 leucine zipper domain.

114 &lt;400&gt; SEQUENCE: 4

```

115  Met Val Asp Gly Gly Ile Thr Gln Ser Pro Lys Tyr Leu Phe Arg Lys
116      1             5             10             15
117  Glu Gly Gln Asn Val Thr Leu Ser Cys Glu Gln Asn Leu Asn His Asp
118             20             25             30
119  Ala Met Tyr Trp Tyr Arg Gln Asp Pro Gly Gln Gly Leu Arg Leu Ile
120             35             40             45
121  Tyr Tyr Ser Gln Ile Val Asn Asp Phe Gln Lys Gly Asp Ile Ala Glu
122             50             55             60
123  Gly Tyr Ser Val Ser Arg Glu Lys Lys Glu Ser Phe Pro Leu Thr Val
124             65             70             75             80
125  Thr Ser Ala Gln Lys Asn Pro Thr Ala Phe Tyr Leu Cys Ala Ser Ser
126             85             90             95
127  Ser Arg Ser Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
128             100            105            110
129  Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe
130             115            120            125
131  Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val
132             130            135            140
133  Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp
134             145            150            155            160
135  Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Pro
136             165            170            175
137  Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser
138             180            185            190
139  Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe
140             195            200            205
141  Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr
142             210            215            220
143  Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp
144             225            230            235            240

```

PAGE: 4

RAW SEQUENCE LISTING  
PATENT APPLICATION US/09/334,969

DATE: 11/26/1999

TIME: 15:46:49

Input Set: I334969.RAW

```

145      Gly Arg Ala Asp Pro Gly Gly Leu Thr Asp Thr Leu Gln Ala Glu Thr
146                      245                      250                      255
147      Asp Gln Leu Glu Asp Lys Lys Ser Ala Leu Gln Thr Glu Ile Ala Asn
148                      260                      265                      270
149      Leu Leu Lys Glu Lys Glu Lys Leu Glu Phe Ile Leu Ala Ala Tyr
150                      275                      280                      285
151 <210> SEQ ID NO 5
152 <211> LENGTH: 918
153 <212> TYPE: DNA
154 <213> ORGANISM: Artificial Sequence
155 <220> FEATURE:
156 <223> OTHER INFORMATION: Description of Artificial Sequence: Gene coding
157      for human HLA-A2/flu matrix peptide restricted
158      JM22 TCR beta chain fused to c-fos leucine zipper
159      domain and BirA biotinylation tag.
160 <400> SEQUENCE: 5
161      atggtggatg gtggaatcac tcagtcccca aagtacctgt tcagaaagga aggacagaat 60
162      gtgacctga gttgtgaaca gaatttgaac cacgatgcca tgtactggta ccgacaggac 120
163      ccagggcaag ggctgagatt gatctactac tcacagatag taaatgactt tcagaaagga 180
164      gatatagctg aagggtacag cgtctctcgg gagaagaagg aatcctttcc tctcactgtg 240
165      acatcggccccc aaaagaacccc gacagctttc tatctctgtg ccagtagttc gaggagctcc 300
166      tacgagcagt acttcggggc gggcaccagg ctcacggtca cagaggacct gaaaaacgtt 360
167      ttcccaccgg aggtcgctgt gtttgaacca tcagaagcag agatctccca caccctaaag 420
168      gccacactgg tgtgcctggc cacaggcttc taccccgacc acgtggagct gagctggtgg 480
169      gtgaatggga aggaggtgca cagtggggtc agcacagacc cgcagccctt caaggagcag 540
170      cccgccctca atgactccag atactgctg agcagccgcc tgagggtctc ggccaccttc 600
171      tggcagaacc cccgcaacca ctccgctgt caagtccagt tctacgggct ctcgagagaat 660
172      gacgagtggga cccaggatag ggccaaacct gtcaccacaga tcgtcagcgc cgaggcctgg 720
173      ggtagagcag accccggggg tctgactgat acactccaag cggagacaga tcaacttgaa 780
174      gacaagaagt ctgcgttgca gaccgagatt gccaatctac tgaaagagaa ggaaaaacta 840
175      gagttcatcc tggcagctta cggatccggt ggtggtctga acgatatttt tgaagctcag 900
176      aaaatcgaat ggcattaa                                     918
177 <210> SEQ ID NO 6
178 <211> LENGTH: 305
179 <212> TYPE: PRT
180 <213> ORGANISM: Artificial Sequence
181 <220> FEATURE:
182 <223> OTHER INFORMATION: Description of Artificial Sequence: Amino acid
183      sequence of human HLA-A2/flu matrix peptide
184      restricted JM22 TCR beta chain fused to c-fos
185      leucine zipper domain and BirA biotinylation tag.
186 <400> SEQUENCE: 6
187      Met Val Asp Gly Gly Ile Thr Gln Ser Pro Lys Tyr Leu Phe Arg Lys
188      1          5          10          15
189      Glu Gly Gln Asn Val Thr Leu Ser Cys Glu Gln Asn Leu Asn His Asp
190      20          25          30
191      Ala Met Tyr Trp Tyr Arg Gln Asp Pro Gly Gln Gly Leu Arg Leu Ile
192      35          40          45
193      Tyr Tyr Ser Gln Ile Val Asn Asp Phe Gln Lys Gly Asp Ile Ala Glu
194      50          55          60

```

PAGE: 5

RAW SEQUENCE LISTING  
PATENT APPLICATION US/09/334,969

DATE: 11/26/1999

TIME: 15:46:49

Input Set: I334969.RAW

```

195      Gly Tyr Ser Val Ser Arg Glu Lys Lys Glu Ser Phe Pro Leu Thr Val
196      65                      70                      75                      80
197      Thr Ser Ala Gln Lys Asn Pro Thr Ala Phe Tyr Leu Cys Ala Ser Ser
198                      85                      90                      95
199      Ser Arg Ser Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
200                      100                     105                     110
201      Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe
202                      115                     120                     125
203      Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val
204                      130                     135                     140
205      Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp
206      145                      150                      155                      160
207      Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln Pro
208                      165                      170                      175
209      Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser
210                      180                      185                      190
211      Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe
212                      195                      200                      205
213      Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr
214                      210                      215                      220
215      Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp
216      225                      230                      235                      240
217      Gly Arg Ala Asp Pro Gly Gly Leu Thr Asp Thr Leu Gln Ala Glu Thr
218                      245                      250                      255
219      Asp Gln Leu Glu Asp Lys Lys Ser Ala Leu Gln Thr Glu Ile Ala Asn
220                      260                      265                      270
221      Leu Leu Lys Glu Lys Glu Lys Leu Glu Phe Ile Leu Ala Ala Tyr Gly
222                      275                      280                      285
223      Ser Gly Gly Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp
224                      290                      295                      300
225      His
226      305
227      <210> SEQ ID NO 7
228      <211> LENGTH: 750
229      <212> TYPE: DNA
230      <213> ORGANISM: Artificial Sequence
231      <220> FEATURE:
232      <223> OTHER INFORMATION: Description of Artificial Sequence: Gene coding
233      for human HLA-A2/HTLV-1 Tax peptide restricted TCR
234      alpha chain from clone A6 fused to c-jun leucine
235      zipper domain.
236      <400> SEQUENCE: 7
237      atgcagaagg aagtggagca gaactctgga cccctcagtg ttccagaggg agccattgcc 60
238      tctctcaact gcacttacag tgaccgaggt tcccagtcct tcttctggta cagacaatat 120
239      tctgggaaaa gccctgagtt gataatgtcc atatactoca atggtgacaa agaagatgga 180
240      aggtttacag cacagctcaa taaagccagc cagtatgttt ctctgctcat cagagactcc 240
241      cagcccagtg attcagccac ctacctctgt gccgttacaa ctgacagctg ggggaaattg 300
242      cagtttggag cagggaccca gggtgtggtc accccagata tccagaaccc tgaccctgcc 360
243      gtgtaccagc tgagagactc taaatccagt gacaagtcgt tctgcctatt caccgatttt 420
244      gattctcaaa caaatgtgtc acaaagtaag gattctgatg tgtatatcac agacaaaact 480

```

PAGE: 6

VERIFICATION SUMMARY  
PATENT APPLICATION US/09/334,969

DATE: 11/26/1999  
TIME: 15:46:49

Input Set: I334969.RAW

Line ? Error/Warning

Original Text

---